Results of Testing

Chemical Name	CAS No.	Study Code/Type	Protocol/Guideline	Species	Exposure	Dose/Concentration	No. per Group	Results	Reference
Tributyl Phosphate	126-73-8	EEATOX Daphnid acute toxicity	40 CFR 797.1300 (modified)	*Daphnia magna*	flow-through, 48 hr	0, 0.48, 0.96, 2.0, 4.0, 8.0 mg/L (nominal)	20/group	The 48-hour EC_{50} of the test substance was determined to be 2.6 mg/L and the 48-hour no-effect concentration was 0.75 mg/L.	55 FR 29411; 7/19/90 OTS0528316
Tributyl Phosphate	126-73-8	EEATOX Acute invertebrate toxicity	40 CFR 795.120 (modified)	gammarus	flow-through, 96 hr	ranged from 0.33 to 5.6 mg/L	20 (10/replicate)	The 96-hour LC_{50} was 1.7 mg/L. The 96-hour EC_{50} value for immobility was 6.2 mg/L. The NOEC was 0.52 mg/L.	55 FR 29411; 7/19/90 OTS0534091
Tributyl Phosphate	126-73-8	EEATOX Acute fish toxicity	40 CFR 797.1400 (modified)	rainbow trout	flow-through, 96 hr	0, 1.3, 2.5, 5.0, 10, 20 mg/L (nominal)	20/group	The 96-hour LC_{50} was calculated to be 13 mg/L. Complete mortality occurred in the 20 mg/L test concentration. Sublethal/behavioral responses (e.g., loss of equilibrium, erratic swimming, labored respiration, surfacing, quiescence, fish on bottom of test chamber and vertical orientation) were noted among the fish in the 10 mg/L test level. The 96-hour no-effect concentration was determined to be 5.0 mg/L based on a lack of sublethal responses at this concentration.	55 FR 29411; 7/19/90 OTS0528315
Tributyl Phosphate	126-73-8	EEATOX Algae acute toxicity	40 CFR 797.1050 (modified)	*Selenastrum capricornutum* (freshwater algae)	static, 96 hr	1.3, 2.5, 5.0, 10, 20 mg/L (nominal)	Not applicable	The 96-hour EC_{50} was determined to be 4.4 mg/L. The no-effect concentration of the test substance was estimated to be 2.2 mg/L which was based on the absence of affects at this and lower concentrations after 96-hours.	55 FR 29411; 6/19/90 OTS0528318
Tributyl Phosphate	126-73-8	EECLIF Fish early life stage	40 CFR 797.1600	rainbow trout (*Oncorhynchus mykiss*)	flow-through	0.22, 0.39, 0.82, 1.7, and 3.7 mg/L	Not specified	No significantly significant reduction in hatchability was detected at any concentration. Length and weight reductions were indicated at 1.7 mg/L. Based on the results of this study, the NOEC and LOEC were determined to be 0.82 snf 1.7 mg/L, respectively. The pont estimate MATC was calculted to be 1.2 mg/L.	57 FR 3203; 1/29/92. Docket OPPTS-44580
Tributyl Phosphate	126-73-8	EECTOX Chronic invertebrate toxicity	40 CFR 797.1330 (modified)	*Daphnia magna*	flow-through, 21 days	ranged from 0.095 to 2.1 mg/L (mean measured)	20 (10/replicate)	The 21-day EC_{50} (immobilization) was >2.1 mg/L; the NOEC was 0.87 mg/L; the LOEC was 2.1 mg/L (based on growth in length and days to first brood). The 21-day maximum acceptable toxicant concentration (MATC) was >0.87 and <2.1 mg/L.	OTS0534090

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Tributyl Phosphate	126-73-8	EFADEGHYDR Hydrolysis	40 CFR 796.3500	Not applicable	30 days at pH 3, 7, 11, 25 ˚C	10 ppm	Not applicable	No evidence of appreciable hydrolytic degradation of ^{14}C-tributyl phosphate was detected in any of the buffered solutions. The C14-mass balance ranged from 101.9% to 116.0% of the initial test solution concentrations with a mean of 108%. The thin-layer chromatography plate recoveries ranged from 67.5% to 96.4% with a mean recovery of 85.6%.	55 FR 50055; 12/04/90 OTS0528323
Tributyl Phosphate	126-73-8	EFPCHEVPRE Vapor pressure	40 CFR 796.1950	Not applicable	25 ˚C	Not applicable	Not applicable	Results indicate a mean vapor pressure of the test substance of 2.6 x 10^{-6} mm Hg.	55 FR 50055; 12/04/90 OTS0528324
Tributyl Phosphate	126-73-8	EFTSPT Soil and sediment adsorption isotherm	40 CFR 796.2750	Not applicable	Not specified	Not applicable	Not applicable	The test compound was relatively stable through the adsorption phase with 94.4%, 92.1%, and 94.1% of the C14-activity characterized as parent for soils (silt loam, clay loam, sandy loam), respectively. Soil extracts analyzed by TLC showed that 97.2%, 97.4%, and 96.4% of the C14-recovered was parent material from silt, clay, sandy loams, respectively. The mean C14-mass balance accountability was 95.8%, 101%, and 97.7% for silt, clay, and sandy loams, respectively. The percent adsorbed to silt, clay, and sandy loams was 55.3%, 63.7%, and 47.2%, respectively.	55 FR 50055; 12/04/90 OTS0528322
Tributyl Phosphate	126-73-8	HEADME Pharmacokinetics study	40 CFR 795.228	rats	intravenous	5 mg/kg	4/sex	Recovery of the test substance from urine, feces, expired air, and various organs and tissues was about 90% or above. There was no apparent gender differences in recovery. Results indicate that Phase I metabolism (oxidation and hydrolysis) represented the major biotransformation pathway.	59 FR 7784; 2/9/93, Docket OPPTS-44595
Tributyl Phosphate	126-73-8	HEADME Pharmacokinetics study	40 CFR 795.228	rats	dermal, 6-hr	10 and 350 mg/kg	4/sex	Recovery of the test substance from urine, feces, expired air, and various organs and tissues ranged from 66% to 80%. There was no apparent gender differences in recovery. Results indicate that Phase I metabolism (oxidation and hydrolysis) represented the major biotransformation pathway.	59 FR 7784; 2/9/93, Docket OPPTS-44595

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Tributyl Phosphate	126-73-8	HEADME Pharmacokinetics study	40 CFR 795.228	rats	oral, single	10 and 350 mg/kg	4/sex	Recovery of the test substance from urine, feces, expired air, and various organs and tissues was about 90% or above. There was no apparent gender differences in recovery. Results indicate that Phase I metabolism (oxidation and hydrolysis) represented the major biotransformation pathway.	59 FR 7784; 2/9/93, Docket OPPTS-44595
Tributyl Phosphate	126-73-8	HEADME Pharmacokinetics study	40 CFR 795.228	rats	oral, 7 days nonlabeled, then 1 day labeled	10 and 350 mg/kg	4/sex	Recovery of the test substance from urine, feces, expired air, and various organs and tissues was about 90% or above. There was no apparent gender differences in recovery. Results indicate that Phase I metabolism (oxidation and hydrolysis) represented the major biotransformation pathway.	59 FR 7784; 2/9/93, Docket OPPTS-44595
Tributyl Phosphate	126-73-8	HEADME Pharmacokinetics study	40 CFR 795.228	minipigs	intravenous	5 mg/kg	2/sex	Radioactive material was recovered at more than 80% for all dose groups. The test substance was rapidly eliminated primarily via the urine and within the first 6 hr of intravenous exposure, and does not appear to bioaccumulate in the bladder or kidneys. There was no apparent sex differences in this study.	59 FR 7784; 2/9/93, Docket OPPTS-44595
Tributyl Phosphate	126-73-8	HEADME Pharmacokinetics study	40 CFR 795.228	minipigs	dermal, 6-hr	10 and 350 mg/kg	2/sex	Radioactive material was recovered at about 60% for all dose groups, except the low dose group. The test substance was very poorly absorbed (maximum amount absorbed was about 5% of dose) and it was eliminated mostly via the urine, and does not appear to bioaccumulate in the bladder or kidneys. There was no apparent sex differences in this study.	59 FR 7784; 2/9/93, Docket# OPPTS-44595
Tributyl Phosphate	126-73-8	HECTOXCARC Oncogenicity	40 CFR 798.3300 (modified)	mice	oral (diet), 1x/d, 18 mo	0, 150, 1000, 3500 ppm	50/sex/group	Dose-related, statistically significant increases in liver weights and liver/body and liver/brain weight ratios, relative to control values, were seen in both sexes at the 1000 ppm and the 3500 ppm. Macroscopic and microscopic pathology examinations revealed a statistically significant increased in the incidence of benign liver tumors in the 3500 ppm males and a concurrent increase in the incidence of proliferative lesions of the liver in this group. The incidences of malignant tumors were comparable to controls. Statistical analysis revealed no association between the incidence of benign hepatocellular adenomas and TBP administration in female mice.	59 FR 17101; 4/11/94 OTS0526409-9

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Tributyl Phosphate	126-73-8	HECTOXCARC Oncogenicity	40 CFR 798.3300 (modified)	rats	oral (diet), 1x/d, 18 months	0, 200, 700, 3000 ppm	50/sex/group	Dose-related microscopic alterations in the urinary bladder consisted of epithelial hyperplasia and papilloma in both sexes at the 700 and 3000 ppm dose levels. Malignant tumors (transitional cell carcinoma or squamous cell carcinoma) were also present in the high dose (3000 ppm) males and females.	59 FR 17101;4/11/94 OTS0526409-9
Tributyl Phosphate	126-73-8	HEDSEN Dermal sensitization study	40 CFR 798.4100	guinea pigs	dermal, 6 hr, 1x/wk, 3 wks	0.31 mL	10/sex	The treatment did not display sensitizing reactions (erythema/eschar and edema scores of 0).	55 FR 13956; 4/13/90 OTS0528314
Tributyl Phosphate	126-73-8	HEGTOXCHRM Mammalian cytogenetic assay	40 CFR 798.5375	hamsters	*in vitro*	0.013, 0.025, 0.05, 0.1, 0.15 µl/mL (without activation); 0.01, 0.019, 0.038, 0.075, 0.15 µl/mL (with activation)	Not applicable	No metaphase cells were located for evaluation at 0.15 µl/mL (with and without activation). Toxicity, as measured by a reduction in mitotic index, was approximately 96% at the highest test concentration analyzed (0.1 µl/mL), with and without activation. The four highest test concentrations had no increase in chromosome aberrations either with or without activation. The test substance was concluded to be negative in the CHO cytogenetics assay.	OTS0528319
Tributyl Phosphate	126-73-8	HEGTOXMUTA Gene mutations in somatic cells	40 CFR 798.5300	hamsters	*in vitro*	0.05, 0.07, 0.08, 0.09, 0.11 µl/mL (without activation); 0.06, 0.08, 0.10, 0.125, 0.15 µl/mL (with activation)	Not applicable	Under the conditions of these mutagenicity tests, the test substance was negative in both the absence and presence of exogenous metabolic activation.	OTS0528320
Tributyl Phosphate	126-73-8	HENEUR Functional observational battery	40 CFR 798.6050	rats	oral (gavage), 13 wks	0, 32.5, 100, 325 mg/kg/day	12/sex/group	Qualitative and quantitative functional observational battery assessments (grip strength and hind limb splay) did not reveal any significant effects that could be attributed to treatment.	56 FR 16333; 4/22/91 OTS0529309
Tributyl Phosphate	126-73-8	HENEUR Motor activity	40 CFR 798.6200	rats	oral (gavage), 13 wks	0, 32.5, 100, 325 mg/kg/day	12/sex/group	Results of motor activity tests and gross pathology evaluations were unremarkable.	56 FR 16333; 4/22/91 OTS0529309
Tributyl Phosphate	126-73-8	HENEUR Neuropathology	40 CFR 798.6400	rats	oral (gavage), 13 wks	0, 32.5, 100, 325 mg/kg/day	12/sex/group	Neuropathological evaluations of microscopical examination of the brain, spinal cord, gastrocnemius muscle, and peripheral structures of the nervous system revealed no neurotoxic effects caused by treatment.	56 FR 16333; 4/22/91 OTS0529309

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Tributyl Phosphate	126-73-8	HERTOXTERA Developmental toxicity	40 CFR 798.4900 (modified)	rats	oral (gavage)	0, 188, 375, 750 mg/kg/d	Not specified	An interim status report summarizes results after completion of the in-life portions of the definitive study. Maternal mortality occurred in the 750 mg/kg/day group. No adverse effects were noted in any developmental or reproduction parameter.	OTS0529383
Tributyl Phosphate	126-73-8	HERTOXTERA Developmental toxicity	40 CFR 798.4900 (modified)	rabbits	oral (gavage), gestation d 6 through 18	0, 50, 150, 400 mg/kg/d	24 females	An interim draft of an unaudited completed study indicates maternal toxicity (decreased body weight gain) at 400 mg/kg/day. Increased incidence of resorptions were also noted at 400 mg/kg/day.	OTS0529386
Tributyl Phosphate	126-73-8	HERTOXTERE Reproduction/fertility effects	40 CFR 798.4700 (modified)	rats	oral (dietary), 2 generations	0, 100, 300, 1500, 5000 ppm	Not specified	The in-life portion is completed. Significant decreases were seen in F1 generation body weights, food consumption and organ weights in the high-dose group only. No other information is provided.	OTS0529391